

Scaled data based on original data using
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-State
Lighting Products

Test Report Prepared for
Cooper Lighting Solutions
(formerly Eaton)

Brand: HALO COMMERCIAL

Report Number: P345423

Luminaire Tested: **PR4FS24D010 PR4M24WW9FSMW 3000Lm4000K**

Issue Date: 03/03/2020

Test Information

Test Method: LM-79-08
Report Number: P345423
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G1-1908-453-7)
Test Lab: INNOVATION CENTER(G1)
Issue Date: 03/03/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: HALO COMMERCIAL
Catalog Number: PR4FS24D010 PR4M24WW9FSMW 3000Lm4000K
Description: PR4 WALLWASH ASSEMBLY WITH, MATTE WHITE FINISH
Light Source: ARRAY OF HIGH LUMEN LEDs 90CRI / 4000K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1928.3 lumens
Efficiency: N/A
Efficacy: 67.7 lumens/watt
Spacing Criteria (0/90/45): 0.95 / 1.12 / 1.11
Luminous Opening: Circular (Dia: 0.4' x H: 0')
CIE Type: Direct

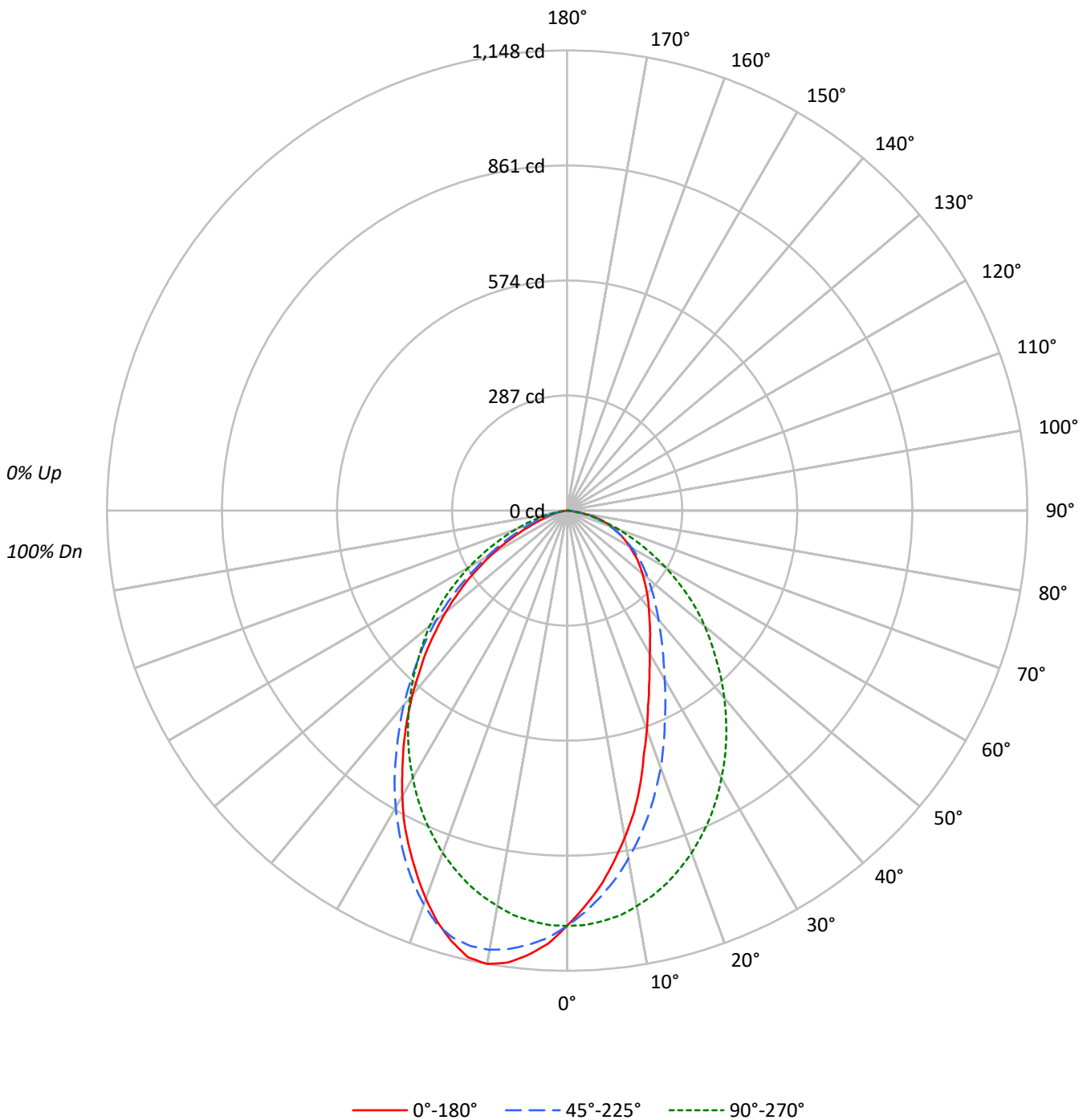
Input Watts (W): 28.5
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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Luminous Intensity Polar Plot





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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20					20					20					20					20					
RC	80					70					50					30					10					0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0		
RCR																										
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100					100			
1	111	106	103	100	108	104	101	98	100	97	95	96	94	92	93	91	89					87				
2	102	95	89	84	99	93	87	83	89	85	81	86	82	79	83	80	77					75				
3	94	85	77	72	92	83	76	71	80	75	70	78	73	69	75	71	68					66				
4	87	76	68	62	85	75	67	62	72	66	61	70	65	60	68	63	59					57				
5	80	69	61	55	78	68	60	54	66	59	54	64	58	53	62	57	53					51				
6	75	63	54	49	73	62	54	48	60	53	48	58	52	48	57	51	47					45				
7	70	57	49	44	68	57	49	43	55	48	43	54	47	43	52	47	43					41				
8	65	53	45	39	64	52	45	39	51	44	39	50	43	39	48	43	39					37				
9	61	49	41	36	60	48	41	36	47	40	36	46	40	35	45	39	35					34				
10	58	45	38	33	56	45	38	33	44	37	33	43	37	33	42	36	32					31				

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	90627	90627	90627
5°	82667	90245	97708
10°	73515	88979	102000
15°	63914	87123	100770
20°	54091	84575	95931
25°	46692	81475	89804
30°	41663	77791	83053
35°	38484	73903	75803
40°	36150	69629	68544
45°	34587	65104	61368
50°	33380	60977	54078
55°	32604	56013	46192
60°	31646	49630	37402
65°	30921	42263	27506
70°	30152	34704	18925
75°	28726	26394	14363
80°	19998	15162	8261
85°	8230	5520	2710



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	97.1	5.0
10°-20°	263.1	13.6
20°-30°	355.6	18.4
30°-40°	374.3	19.4
40°-50°	337.2	17.5
50°-60°	260.3	13.5
60°-70°	160.2	8.3
70°-80°	70.4	3.7
80°-90°	10.1	0.5
90°-100°	0.0	0.0
100°-110°	0.0	0.0
110°-120°	0.0	0.0
120°-130°	0.0	0.0
130°-140°	0.0	0.0
140°-150°	0.0	0.0
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	715.8	37.1
0°-40°	1090.0	56.5
0°-60°	1687.5	87.5
0°-90°	1928.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1928.3	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1036	1036	1036	1036	1036	
5°	942	966	1028	1087	1113	86
15°	706	785	962	1103	1113	196
25°	484	577	844	958	930	224
35°	360	414	692	744	710	226
45°	280	306	526	526	496	216
55°	214	225	367	325	303	190
65°	149	149	204	155	133	148
75°	85	75	78	51	42	87
85°	8	7	6	4	3	14
90°	0	0	0	0	0	



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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	1036.1	1036.1	1036.1	1036.1	1036.1	1036.1	1036.1	1036.1	1036.1	1036.1	1036.1
2.5°	989.5	990.8	990.8	990.8	992.2	993.6	993.6	996.3	997.7	1000.4	1003.2
5°	941.5	940.1	940.1	942.9	945.6	947.0	947.0	952.5	956.6	960.7	966.2
7.5°	885.3	883.9	888.0	889.4	892.2	896.3	899.0	904.5	908.6	918.2	926.4
10°	827.7	827.7	830.5	834.6	838.7	842.8	845.6	852.4	860.6	870.2	881.2
12.5°	770.2	766.1	770.2	775.7	779.8	783.9	788.0	796.2	808.6	820.9	834.6
15°	705.8	704.4	707.1	712.6	722.2	725.0	729.1	741.4	753.7	770.2	785.3
17.5°	637.3	641.4	642.7	651.0	660.6	664.7	668.8	681.1	698.9	715.4	733.2
20°	581.1	578.3	583.8	589.3	597.5	604.4	609.8	623.6	642.7	660.6	682.5
22.5°	527.6	526.3	530.4	537.2	544.1	549.5	555.0	568.7	583.8	604.4	629.0
25°	483.8	482.4	486.5	490.6	498.8	503.0	507.1	520.8	537.2	553.7	577.0
27.5°	445.4	445.4	448.1	450.9	457.7	461.8	467.3	478.3	492.0	508.4	530.4
30°	412.5	412.5	415.2	418.0	424.8	427.6	431.7	439.9	450.9	468.7	486.5
32.5°	385.1	385.1	386.5	390.6	393.3	396.1	400.2	407.0	418.0	431.7	448.1
35°	360.4	360.4	361.8	364.5	368.6	370.0	372.8	379.6	387.8	398.8	413.9
37.5°	337.1	338.5	338.5	341.2	344.0	345.4	348.1	353.6	360.4	370.0	382.4
40°	316.6	317.9	317.9	320.7	323.4	324.8	326.2	328.9	337.1	344.0	354.9
42.5°	298.8	298.8	298.8	300.1	302.9	304.2	305.6	309.7	313.8	320.7	328.9
45°	279.6	279.6	280.9	282.3	285.1	285.1	286.4	290.5	293.3	298.8	305.6
47.5°	261.8	261.8	263.1	263.1	265.9	265.9	267.2	270.0	272.7	278.2	283.7
50°	245.3	245.3	245.3	246.7	248.1	249.4	249.4	252.2	254.9	259.0	263.1
52.5°	228.9	228.9	228.9	228.9	230.2	231.6	231.6	234.3	237.1	239.8	243.9
55°	213.8	212.4	213.8	213.8	213.8	215.2	215.2	217.9	217.9	220.6	224.8
57.5°	196.0	197.3	197.3	196.0	197.3	198.7	198.7	198.7	200.1	202.8	204.2
60°	180.9	180.9	180.9	180.9	182.3	182.3	182.3	182.3	183.6	183.6	186.4
62.5°	164.5	164.5	165.8	165.8	164.5	165.8	165.8	165.8	167.2	167.2	167.2
65°	149.4	149.4	149.4	149.4	149.4	149.4	149.4	149.4	149.4	149.4	149.4
67.5°	132.9	132.9	132.9	132.9	132.9	132.9	132.9	131.6	131.6	131.6	130.2
70°	117.9	117.9	117.9	116.5	116.5	116.5	116.5	115.1	115.1	113.7	112.4
72.5°	101.4	101.4	101.4	100.0	100.0	100.0	98.7	97.3	95.9	94.6	94.6
75°	85.0	85.0	83.6	82.2	82.2	80.9	80.9	79.5	79.5	76.7	75.4
77.5°	65.8	64.4	64.4	64.4	63.0	61.7	61.7	60.3	58.9	58.9	57.6
80°	39.7	39.7	41.1	39.7	41.1	39.7	39.7	41.1	39.7	38.4	38.4
82.5°	19.2	19.2	20.6	19.2	20.6	20.6	20.6	19.2	19.2	19.2	19.2
85°	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	6.9	6.9	6.9
87.5°	5.5	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	1036.1	1036.1	1036.1	1036.1	1036.1	1036.1	1036.1	1036.1	1036.1	1036.1	1036.1
2.5°	1005.9	1010.0	1011.4	1015.5	1016.9	1019.6	1022.4	1026.5	1030.6	1034.7	1037.4
5°	971.6	978.5	984.0	990.8	994.9	997.7	1005.9	1012.8	1021.0	1027.8	1034.7
7.5°	934.6	942.9	955.2	963.4	967.5	974.4	984.0	994.9	1005.9	1018.2	1027.8
10°	892.2	904.5	916.8	931.9	938.8	945.6	957.9	973.0	988.1	1001.8	1016.9
12.5°	846.9	863.4	879.8	894.9	904.5	912.7	931.9	948.3	966.2	984.0	1000.4
15°	803.1	820.9	840.1	859.3	870.2	879.8	899.0	919.6	941.5	962.1	981.2
17.5°	755.1	775.7	797.6	819.5	830.5	842.8	867.5	889.4	914.1	936.0	959.3
20°	705.8	729.1	752.4	779.8	790.7	804.5	829.1	856.5	882.6	908.6	933.3
22.5°	655.1	681.1	707.1	735.9	751.0	764.7	793.5	820.9	849.7	877.1	904.5
25°	603.0	633.1	663.3	692.1	708.5	722.2	753.7	785.3	815.4	844.2	873.0
27.5°	555.0	583.8	616.7	648.2	664.7	679.7	714.0	744.2	777.0	808.6	837.3
30°	511.2	538.6	571.5	605.7	622.2	638.6	672.9	707.1	737.3	770.2	801.7
32.5°	470.1	494.7	527.6	561.9	581.1	596.1	631.8	664.7	698.9	731.8	763.3
35°	431.7	456.4	485.1	519.4	535.8	553.7	590.7	624.9	657.8	692.1	720.9
37.5°	398.8	418.0	444.0	476.9	494.7	512.5	549.5	583.8	616.7	651.0	681.1
40°	367.3	385.1	408.4	437.2	455.0	472.8	508.4	542.7	575.6	609.8	641.4
42.5°	341.2	354.9	374.1	401.5	416.6	434.4	470.1	503.0	535.8	568.7	598.9
45°	315.2	327.5	344.0	365.9	381.0	397.4	431.7	466.0	496.1	526.3	556.4
47.5°	290.5	300.1	315.2	334.4	346.7	361.8	394.7	427.6	457.7	486.5	513.9
50°	268.6	276.8	290.5	304.2	315.2	328.9	357.7	390.6	419.4	448.1	472.8
52.5°	248.1	254.9	264.5	278.2	286.4	297.4	324.8	353.6	382.4	408.4	431.7
55°	228.9	233.0	241.2	250.8	257.6	267.2	290.5	317.9	344.0	367.3	386.5
57.5°	206.9	212.4	217.9	224.8	231.6	237.1	254.9	279.6	302.9	323.4	342.6
60°	187.8	191.9	194.6	201.5	204.2	209.7	223.4	243.9	265.9	283.7	297.4
62.5°	168.6	169.9	172.7	178.2	179.5	183.6	193.2	209.7	226.1	242.6	256.3
65°	149.4	149.4	152.1	153.5	156.2	157.6	164.5	176.8	191.9	204.2	212.4
67.5°	130.2	130.2	131.6	131.6	134.3	134.3	138.4	148.0	157.6	168.6	175.4
70°	111.0	111.0	111.0	111.0	111.0	112.4	115.1	120.6	127.5	135.7	139.8
72.5°	93.2	91.8	91.8	90.4	90.4	90.4	91.8	94.6	100.0	105.5	109.6
75°	74.0	72.6	71.3	71.3	69.9	69.9	69.9	72.6	75.4	78.1	79.5
77.5°	54.8	54.8	53.4	50.7	50.7	49.3	49.3	49.3	50.7	53.4	52.1
80°	38.4	35.6	34.3	34.3	32.9	32.9	31.5	30.1	30.1	30.1	28.8
82.5°	17.8	17.8	17.8	16.4	16.4	16.4	16.4	15.1	15.1	13.7	13.7
85°	6.9	6.9	6.9	6.9	6.9	6.9	6.9	5.5	5.5	5.5	5.5
87.5°	4.1	4.1	4.1	4.1	4.1	2.7	2.7	2.7	2.7	2.7	2.7
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	1036.1	1036.1	1036.1	1036.1	1036.1	1036.1	1036.1	1036.1	1036.1	1036.1	1036.1
2.5°	1041.5	1045.6	1049.8	1051.1	1052.5	1056.6	1059.4	1063.5	1066.2	1067.6	1070.3
5°	1042.9	1049.8	1056.6	1060.7	1063.5	1070.3	1075.8	1082.7	1086.8	1093.6	1097.7
7.5°	1038.8	1049.8	1059.4	1064.8	1070.3	1079.9	1088.1	1096.4	1103.2	1110.1	1116.9
10°	1030.6	1044.3	1058.0	1063.5	1070.3	1081.3	1093.6	1103.2	1112.8	1121.0	1129.2
12.5°	1018.2	1034.7	1051.1	1058.0	1064.8	1079.9	1092.2	1103.2	1112.8	1121.0	1126.5
15°	1001.8	1021.0	1038.8	1048.4	1056.6	1071.7	1084.0	1095.0	1103.2	1108.7	1112.8
17.5°	981.2	1003.2	1023.7	1031.9	1041.5	1055.2	1067.6	1075.8	1081.3	1081.3	1082.7
20°	957.9	981.2	1001.8	1011.4	1021.0	1031.9	1041.5	1045.6	1045.6	1045.6	1042.9
22.5°	930.5	955.2	975.8	985.4	993.6	1001.8	1007.3	1007.3	1004.5	1000.4	996.3
25°	899.0	925.1	944.2	953.8	957.9	964.8	963.4	962.1	957.9	953.8	948.3
27.5°	864.8	890.8	911.3	915.5	918.2	919.6	915.5	912.7	907.2	901.8	897.6
30°	829.1	853.8	870.2	871.6	874.3	873.0	867.5	860.6	855.2	848.3	842.8
32.5°	790.7	814.0	825.0	827.7	826.4	820.9	815.4	808.6	801.7	793.5	786.6
35°	749.6	771.6	778.4	777.0	775.7	768.8	760.6	753.7	744.2	738.7	729.1
37.5°	707.1	727.7	730.4	726.3	722.2	714.0	705.8	698.9	688.0	682.5	675.6
40°	664.7	678.4	678.4	674.3	671.5	663.3	652.3	642.7	634.5	624.9	620.8
42.5°	620.8	631.8	626.3	623.6	619.4	607.1	598.9	589.3	578.3	572.8	566.0
45°	577.0	583.8	577.0	571.5	567.4	556.4	548.2	535.8	526.3	520.8	512.5
47.5°	531.7	534.5	529.0	520.8	518.0	505.7	496.1	486.5	476.9	467.3	460.5
50°	490.6	487.9	479.7	474.2	470.1	456.4	445.4	434.4	426.2	418.0	411.1
52.5°	444.0	441.3	430.3	423.5	416.6	405.7	391.9	383.7	374.1	367.3	360.4
55°	396.1	387.8	379.6	372.8	365.9	354.9	342.6	331.6	324.8	316.6	312.5
57.5°	346.7	341.2	327.5	322.1	316.6	305.6	293.3	283.7	274.1	268.6	265.9
60°	302.9	293.3	282.3	275.5	270.0	259.0	248.1	238.5	231.6	228.9	224.8
62.5°	256.3	248.1	235.7	230.2	226.1	215.2	205.6	197.3	191.9	186.4	183.6
65°	213.8	204.2	194.6	189.1	183.6	174.0	167.2	161.7	154.9	150.7	148.0
67.5°	172.7	164.5	156.2	152.1	148.0	139.8	132.9	128.8	123.3	119.2	113.7
70°	135.7	128.8	123.3	119.2	115.1	108.3	102.8	98.7	94.6	90.4	86.3
72.5°	105.5	98.7	91.8	90.4	87.7	82.2	78.1	74.0	69.9	67.2	64.4
75°	75.4	72.6	67.2	64.4	63.0	58.9	54.8	52.1	50.7	48.0	46.6
77.5°	49.3	46.6	42.5	42.5	41.1	39.7	37.0	34.3	34.3	32.9	32.9
80°	27.4	26.0	24.7	23.3	24.7	23.3	21.9	20.6	20.6	20.6	19.2
82.5°	12.3	12.3	11.0	11.0	11.0	11.0	11.0	9.6	9.6	9.6	9.6
85°	5.5	5.5	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
87.5°	2.7	2.7	2.7	2.7	2.7	2.7	1.4	1.4	1.4	1.4	1.4
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	1036.1	1036.1	1036.1	1036.1	1036.1	1036.1	1036.1	1036.1
2.5°	1073.1	1074.4	1075.8	1077.2	1078.5	1078.5	1079.9	1081.3
5°	1100.5	1104.6	1105.9	1107.3	1110.1	1111.4	1111.4	1112.8
7.5°	1122.4	1127.9	1129.2	1132.0	1134.7	1136.1	1137.5	1137.5
10°	1134.7	1138.8	1140.2	1143.0	1145.7	1147.1	1148.4	1148.4
12.5°	1130.6	1134.7	1136.1	1137.5	1140.2	1141.6	1141.6	1141.6
15°	1115.5	1115.5	1115.5	1115.5	1114.2	1115.5	1115.5	1112.8
17.5°	1081.3	1079.9	1081.3	1078.5	1077.2	1077.2	1075.8	1075.8
20°	1040.2	1038.8	1037.4	1037.4	1036.1	1033.3	1031.9	1030.6
22.5°	993.6	990.8	989.5	989.5	986.7	985.4	984.0	981.2
25°	945.6	938.8	938.8	938.8	936.0	936.0	933.3	930.5
27.5°	890.8	886.7	886.7	883.9	881.2	879.8	878.5	879.8
30°	838.7	833.2	830.5	829.1	827.7	827.7	823.6	822.3
32.5°	781.2	777.0	774.3	772.9	770.2	768.8	767.4	764.7
35°	725.0	720.9	718.1	718.1	712.6	711.3	709.9	709.9
37.5°	667.4	664.7	663.3	659.2	657.8	656.4	656.4	655.1
40°	614.0	609.8	608.5	604.4	603.0	603.0	598.9	600.3
42.5°	559.1	553.7	552.3	550.9	549.5	546.8	548.2	545.4
45°	507.1	503.0	500.2	500.2	498.8	496.1	494.7	496.1
47.5°	456.4	450.9	450.9	449.5	448.1	446.8	446.8	444.0
50°	408.4	404.3	401.5	398.8	400.2	398.8	396.1	397.4
52.5°	356.3	352.2	350.8	350.8	349.5	349.5	348.1	348.1
55°	309.7	305.6	305.6	304.2	304.2	304.2	302.9	302.9
57.5°	263.1	260.4	259.0	259.0	256.3	257.6	256.3	254.9
60°	222.0	217.9	215.2	216.5	215.2	215.2	212.4	213.8
62.5°	179.5	176.8	175.4	175.4	172.7	172.7	169.9	171.3
65°	143.9	139.8	138.4	137.0	134.3	132.9	132.9	132.9
67.5°	111.0	108.3	106.9	104.2	101.4	100.0	98.7	97.3
70°	83.6	80.9	79.5	78.1	76.7	75.4	75.4	74.0
72.5°	63.0	60.3	60.3	58.9	58.9	57.6	57.6	57.6
75°	45.2	45.2	43.9	43.9	42.5	43.9	42.5	42.5
77.5°	31.5	30.1	31.5	30.1	28.8	28.8	28.8	28.8
80°	17.8	17.8	17.8	17.8	17.8	17.8	17.8	16.4
82.5°	9.6	9.6	9.6	8.2	8.2	8.2	8.2	8.2
85°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
87.5°	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)